FIG. 1

```
1                  2                      3                    4
INPUT      →   COLOR          →   QUANTIZATION   →   PRINTING
UNIT           TRANSFORMATION     PROCESSING         UNIT
               UNIT               UNIT
```

F I G. 2

```
                    ┌─────────────┐
                    │     CPU     │ ∼ 11
                    └──────┬──────┘
                           │
                           ↕
┌────────────┐                    ┌─────────────┐
16 ∼│   ROM    │ ◄──────┼──────► │  PRINTING   │ ∼ 13
    └──────────┘        │        │    UNIT     │
                        │        └──────┬──────┘
                        │               ▲
┌────────────┐          │        ┌──────┴──────┐
17 ∼│   RAM    │ ◄──────┼──────► │    IMAGE    │ ∼ 12
    └──────────┘        │        │  PROCESSOR  │
                        │        └──────┬──────┘
                        │               ▲
┌──────────────┐        │        ┌──────┴──────┐
18 ∼│NON-VOLATILE│◄──────┼──────► │   READER    │ ∼ 14
    │MEMORY RAM  │        │        └─────────────┘
    └────────────┘        │
┌────────────┐          │        ┌─────────────┐
15 ∼│ CONTROL  │◄──────┼──────► │    CARD     │ ∼ 22
    │  PANEL   │        │        │ INTERFACE   │
    └──────────┘        │        └─────────────┘
┌────────────┐          │        ┌─────────────┐
19 ∼│ DISPLAY  │◄──────┼──────► │   DRIVING   │ ∼ 21
    │   UNIT   │        │        │    UNIT     │
    └──────────┘        │        └─────────────┘
                        │        ┌─────────────┐
                        └──────► │   SENSOR    │ ∼ 20
                                 │    UNIT     │
                                 └─────────────┘
```

F I G. 3

FIG. 4

ADDRESS	INPUT DATA (REFERENCE)			OUTPUT DATA		
	Rin	Gin	Bin	Ro	Go	Bo
0x0	0	0	0	x	x	x
0x1	0	0	16	x	x	x
0x2	0	0	32	x	x	x
⋮	⋮	⋮	⋮	⋮	⋮	⋮
0x10	0	0	240	x	x	x
0x11	0	0	255	x	x	x
0x12	0	16	0	x	x	x
⋮	⋮	⋮	⋮	⋮	⋮	⋮
0x121	0	255	255	x	x	x
⋮	⋮	⋮	⋮	⋮	⋮	⋮
0xfff	255	255	255	x	x	x

F I G. 5

FIG. 6

201 PRE-PROCESSOR

202 COLOR SPACE TRANSFOR-MATION CIRCUIT

203 CORRECTION CIRCUIT

204 COLOR DIFFERENCE ADDING CIRCUIT

205 HIGH-ORDER BIT EXTRACTION CIRCUIT

206 SUBTRACTING CIRCUIT

207 COLOR DIFFERENCE DISTRIBUTING CIRCUIT

208 COLOR DIFFERENCE INTEGRATING CIRCUIT

209 RAM INTERFACE

210 TABLE MEMORY

211 BUFFER CIRCUIT
- DATA
- XCS
- XRD
- ADR

212 RAM INTERFACE

213 PRECEDING-LINE COLOR DIFFERENCE MEMORY

F I G. 7

START

INITIALIZE ERROR BUFFERS — S101

INITIALIZE MAIN-SCAN COUNTER PIX — S102

READ IN DATA IN ORDER R0, R1, G0, G1, B0, B1 — S103

CONVERT RESOLUTION — S104

PERFORM RGB→CMY COLOR-SPACE TRANSFORMATION — S105

APPLY GAMMA CORRECTION, ETC. — S106

READ OUT COLOR DIFFERENCE DATA CL, ML, YL OF PRECEDING LINE — S107

$$ILPC = Ci + CP + CL$$
$$ILPM = Mi + MP + ML$$
$$ILPY = Yi + YP + YL$$
— S108

GENERATE ILPC', ILPM', ILPY' — S109

INPUT ILPC', ILPM', ILPY' TO OUTPUT-COLOR TABLE AND OBTAIN OUTPUT COLOR DATA Co, Mo, Yo, Ko — S110

EIGHT PIXELS OF PROCESSING COMPLETED? — S111 — NO

YES

OUTPUT DATA — S112

ONE LINE OF PROCESSING COMPLETED? — S113 — NO

YES

ONE PAGE OF PROCESSING COMPLETED? — S114 — NO

YES

IS THERE NEXT PAGE? — S115 — YES

NO

END

F I G. 8

1/16	5/16	2/16
8/16	PIXEL TO BE PROCESSED	

FIG. 9

OUTPUT-COLOR TABLE			
ILPC'	ILPM'	ILPY'	KCMY
000	000	000	0000
000	000	001	0000
000	000	010	0000
000	000	011	0000
000	000	100	0001
000	000	101	0001
⋮	⋮	⋮	⋮
011	011	001	0110
011	011	010	0110
011	011	011	0110
111	111	100	0220
111	111	101	0221
111	111	110	0222
111	111	111	1000

F I G. 10

```
                    ( START )
                        │
                        ▼
┌─────────────────────────────────────────────┐
│              COUNTER y = 0                    │─── S201
└─────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────┐
│              COUNTER x = 0                    │─── S202
└─────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────┐
│   OBTAIN OUTPUT DENSITY DATA Cp, Mp, Yp       │─── S203
│   FROM OUTPUT COLOR DATA Co, Mo, Yo, Ko)      │
└─────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────┐
│         CALCULATE COLOR DIFFERENCE E          │─── S204
└─────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────┐
│          DIFFUSE COLOR DIFFERENCE E           │─── S205
└─────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────┐
│   STORE DIFFUSED DATA OF NEXT LINE IN MEMORY  │─── S206
└─────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────┐
│                  x ++                         │─── S207
└─────────────────────────────────────────────┘
                        │
                        ▼            S208
              ◇ ONE LINE ◇
      NO ◄─── OF PROCESSING
              COMPLETED?
                        │ YES
                        ▼
┌─────────────────────────────────────────────┐
│                  y ++                         │─── S209
└─────────────────────────────────────────────┘
                        │
                        ▼            S210
              ◇ ONE PAGE ◇
      NO ◄─── OF PROCESSING
              COMPLETED?
                        │ YES
                        ▼
                   ( END )
```

F I G. 11

OUTPUT-DENSITY TABLE			
KCMY	Cp	Mp	Yp
0000	3	0	12
0000	3	0	12
0000	3	0	12
0000	3	0	12
0001	2	7	220
0001	2	7	220
⋮	⋮	⋮	⋮
0110	130	150	30
0110	130	150	30
0110	130	150	30
0220	195	220	80
0221	220	224	180
0222	220	225	221
1000	241	255	246

FIG. 12

	PIXEL TO BE PROCESSED →	8/16
2/16	5/16	1/16

F I G. 13

		C		
		0	1	2
M	0	WHITE	LIGHT CYAN	DARK CYAN
	1	LIGHT MAGENTA	LIGHT BLUE	CYAN · BLUE
	2	DARK MAGENTA	MAGENTA · BLUE	DARK BLUE

FIG. 14

	C	C
		C

| M | C | C |
| | M | C+M |

| M | C+M | C+M |
| M | M | C+M |

F I G. 15

	Cp	Mp	Yp
WHITE	3	0	12
YELLOW1	2	7	220
MAGENTA1	50	255	127
⋮	⋮	⋮	⋮
RED = YELLOW + MAGENTA	40	165	150
⋮	⋮	⋮	⋮
DARK RED = YELLOW2 · MAGENTA2	54	231	201
DARK CYAN	255	93	38
BLUE = CYAN + MAGENTA	130	150	30
GREEN = CYAN + YELLOW	259	92	154
BLUE = CYAN2 + MAGENTA2	253	246	125
⋮	⋮	⋮	⋮
GRAY = CYAN2 + MAGENTA2 + YELLOW	220	224	180
GRAY = CYAN2 + MAGENTA2 + YELLOW2	220	225	221
BLACK	241	255	246

F I G. 16

ILPC	ILPM	ILPY	KCMY	Cp	Mp	Yp
000	000	000	0000	3	0	12
000	000	001	0000	3	0	12
000	000	010	0000	3	0	12
000	000	011	0000	3	0	12
000	000	100	0001	2	7	220
000	000	101	0001	2	7	220
⋮	⋮	⋮	⋮	⋮	⋮	⋮
011	011	001	0110	130	150	30
011	011	010	0110	130	150	30
011	011	011	0110	130	150	30
111	111	100	0220	195	220	80
111	111	101	0221	220	224	180
111	111	110	0222	220	225	221
111	111	111	1000	241	255	246

FIG. 17A

FIG. 17B

F I G. 18A

F I G. 18B

F I G. 19

	0	1	2	3	4	5	6	7
7	c	c	c	c	c+m	c+m	c+m	c+m
6	c	c	c	c	c+m	c+m	c+m	c+m
5	c	c	c+m	c+m	c+m	c+m	c+m	c+m
4	c	c	c	c+m	c+m	c+m	c+m	c+m
3	c	c+m	c+m	c+m	c+m	c+m	c+m	c+m
2	c	c+m	c+m	c+m	c+m	c+m	m	m
1	c	m	c+m	c+m	m	m	m	m
0		m	m	m	m	m	m	m

ILPC

ILPM

F I G. 20

ILPC	0	1	2	3	4	5	6	7
7	c	c	c	c	c+m	c+m	c+m	c+m
6	c	c	c	c	c+m	c+m	c+m	c+m
5	c	c	c+m	c+m	c+m	c+m	c+m	c+m
4	c	c	c	c+m	c+m	c+m	c+m	c+m
3	c	c+m	c+m	c+m	c+m	c+m	c+m	c+m
2	c	c	m	c+m	c+m	c+m	m	m
1	c	m	m	c+m	m	m	m	m
0		m	m	m	m	m	m	m
	0	1	2	3	4	5	6	7

ILPM

F I G. 21